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Military culture: Masculine norms, perceived personal control, autonomous motivation, and coping differences between injured male military personnel and civilian sportsmen

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Abstract

Engagement in rehabilitation is critical to enhanced outcomes from musculoskeletal injuries (MIs) and has been found to be related to some psychosocial factors. This study tested whether military culture, defined by greater adherence to masculine norms; higher levels of perceived personal control and autonomous motivation; lower levels of emotion-focused coping strategies; and a greater use of problem-focused coping strategies, resulted in better engagement in rehabilitation following MI. These hypothesised cultural differences were measured by administration of validated self-report questionnaires (Brief Illness Perception Questionnaire; Conformity to Masculine Norms Inventory; Treatment Self-Regulation Questionnaire; and the Brief COPE). A between groups quasi-experimental design compared self-report variables and physiotherapist engagement ratings for 16 male military personnel and 22 committed sportsmen. All participants had sustained musculoskeletal injuries within the past 6 months, for which they were having physiotherapy. No evidence was found for the presence of a hypothesised military culture defined by greater adherence to masculine norms, higher levels of perceived personal control and autonomous motivation and greater use of problem-focused coping strategies. Clinical and research implications are discussed with recommendations for future work to build upon this study.

Keywords: Military, culture, civilians, sports, psychosocial, musculoskeletal, response, injury, rehabilitation, physiotherapy.

Introduction

Conceptualising Military Culture

It is generally accepted that the military has a discrete culture from the general population. A study comparing United States of America (USA) and Norwegian naval cadets with USA civilians found that the military groups had more character strengths in common with each other than either did with the civilian population (Matthews, Eid, Kelly, Bailey & Peterson, 2006). Bryan and Marrow (2011) suggest that these transnational similarities point to the existence of a discrete ‘military culture’ that should be embraced when engaging military personnel in health interventions.

Military culture is said to promote a warrior ethos in the serving individual that ‘rewards physical and emotional prowess and frowns upon weakness and timidity’ (Abb & Goodale, 2011). The warrior culture has also been described as strongly promoting strength, resilience, courage and personal sacrifice, instilling a sense of elitism and superiority with an emphasis on mental toughness, inner strength and self-reliance in dealing with injury and illness (Tanielian & Jaycox, 2008).

Brooks (2001) proposed that men who adopt traditional male gender ideologies or masculine norms, such as the toughness described above, are more likely to be drawn to military service and thus have this further reinforced by the military or warrior culture. Thompson and Pleck (1986) describe the construct of ‘toughness’, in the context of Western cultural male gender norms, as promoting the suppression of vulnerable emotions such as fear and worry and the avoidance of relying on others in times of distress. Tamres, Janicki and Helgeson (2002) looked at gender differences in coping strategies and found that men were

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more likely to adopt problem-focused coping strategies, which would likely be even more prominent in a group adhering more strongly to male gender norms, e.g. military men.

Lazarus and Folkman (1984) also proposed that one's cultural norms, values and beliefs influence the appraisal of stressors and affect the assessment of coping response appropriateness.

If a military culture does exist, we might expect differences between military and non-military groups in response to injuries or illness. However, despite a wealth of military culture postulations in the literature, research specifically testing the characteristics, existence and influence of a British military culture could not be found.

To test the notion that military culture is distinct from other cultures around it, it is important to make comparisons with a group that, according to the literature, shares some of its predicted characteristics. Young, McTeer and White (1994), for example, undertook research with male athletes and asked them to reflect on sport, injury and pain. Their research showed that injury and pain could be experienced as 'masculinizing', meaning that engaging in sports that had high risk of injury and enduring injury pain strengthened a sense of masculinity that could also be challenged when taking time out to recover. Young et al. (1994) propose that as masculinity in society becomes frowned upon, sport is one of the few areas where certain types of masculinity are constructed and reconstructed. The existing literature on cultural and psychosocial factors related to pain and injury in male sports groups appears to show that male sports people may embody some of the traits postulated widely to differentiate military culture from the general population; male sports people have therefore been selected as a useful comparison group to start to test these notions.

Relevance of Military Culture to Response to Injury and Rehabilitation

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Damage to the muscular or skeletal systems of the body, commonly arising from strenuous activity such as sport or work, are known as musculoskeletal injuries.

Musculoskeletal problems are consistently the most common cause of medical discharge from the British armed forces e.g. between 2008 and 2017 (Ministry of Defence (MOD), 2013; 2017) and Strowbridge and Burgess (2002) found lower limb musculoskeletal injuries accounted for 55.8% of all referrals to the sports injury and rehabilitation centre of a large British Army garrison.

Generally, in the United Kingdom (UK), musculoskeletal problems are consistently the most commonly reported reasons for work days lost, with 30.8 million days lost in 2016 alone (Office for National Statistics, 2017). Nicholl, Coleman and Williams (1991) estimated that 1-1.5 million episodes of exercise-related musculoskeletal injuries occur each year in the UK, with sports-acquired musculoskeletal injuries leading to lost time in participation and training (Ford, Eklund & Gordon, 2000), increased likelihood of re-injury (Knowles et al., 2006), individual psychological trauma (Crossman, 1997) and depression (Smith, Scott & Wiese, 1990).

Musculoskeletal injury rehabilitation is essential for improved recovery and the prevention of re-injury, however not all those with injuries engage wholly with recommended treatment programmes with specialists, such as physiotherapists (Chan, Hagger & Spray, 2011). Hagger, Chatzisarantis, Griffin, and Thatcher (2005) used Leventhal, Meyer and Nerenz's (1980) Self-Regulation Model (SRM) to understand the psychosocial factors affecting rehabilitation of injured sports-participants. The SRM proposes that individuals manage illness by developing idiosyncratic understandings of its nature (i.e. representations of the cause, identity, perceived control, severity of consequences, and timeline of the illness), triggering coping strategies as a response (Leventhal et al., 1980). Hagger et al. (2005) found

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that self-reported personal control was associated with problem-focused coping and less negative emotional affect, whilst personal control and problem-focused coping strategies were positively correlated with attendance at rehabilitation. Chan et al. (2011) found that injured athletes with more autonomous-motivation were more likely to engage fully with rehabilitation and thus have improved outcomes than those who were pressured or coerced. To our knowledge there is no research exploring this with British military personnel, despite musculoskeletal problems being the most common cause of medical discharge from the British armed forces (MOD, 2013; MOD 2017).

This study explores psychosocial differences in response to injury, motivation for and engagement with rehabilitation between injured men exposed to the ‘British military culture’ and those who are not. Due to the proposed existence of the military culture, it was expected that the military group would respond to musculoskeletal injury within the context of greater adherence to masculine norms and so demonstrate less vulnerability and more ‘toughness’. As a way of testing if these styles were truly ‘military’, as opposed to being a feature of physically ambitious young men, the ‘control’ group was selected to be injured civilian sporting men, a group the sporting injury literature suggests demonstrate characteristics postulated to be definitive of the military culture. The committed sportsmen were used for a control group where demographic variables, including age, were similar and for whom physical fitness was of comparative importance. The aim was to produce recommendations for future research on the topics of military culture and engagement in musculoskeletal injury rehabilitation in military personnel, with particular consideration to methods for undertaking research in the military as civilian investigators.

Hypotheses

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It was predicted that due to military culture exposure, the military group would demonstrate: greater adherence to masculine norms; higher levels of perceived personal control and autonomous motivation; lower levels of emotion-focused coping strategies and a greater use of problem-focused coping strategies and better engagement in rehabilitation than the non-military sporting injury group.

Method

Design

This between groups study employed a quantitative quasi-experimental design using participant self-report questionnaires and engagement rating scales completed by physiotherapists.

Participants

All participants were male; currently serving in the British military or a sports person who had never served in the military; aged 18-40 years; had a muscular and/or skeletal injury within the past six months (excluding those to the head or causing paralysis); were having or going to be having physiotherapy (but not through the British National Health Service (NHS)). Participants were excluded if they had had an amputation or were a military reservist. Sex and age were limited to reduce confounding factors. Military reservists and veterans were excluded to preserve the military/non-military homogeneity of the groups. Injury type was initially limited to lower-limbs to increase homogeneity but this was broadened in response to slower than expected recruitment rates. Military status determined group allocation, with no group randomisation. Participant demographics are included in the results section.

Materials

The participant questionnaire booklet contained measures with known psychometric properties and were selected for their relative brevity to reduce participant burden.

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A 21-point Numeric Pain Rating Scale (NRPS) (Herr, Spratt, Mobily & Richardson, 2004) was used to capture current level of injury pain. The 21-point NRPS has been found to have excellent concurrent validity, e.g. with the 11-point NPRS (0.87) and good face validity e.g. when shown five rating scales, the highest percentage of participants preferred a 21-point NPRS (35.3%) (Herr et al., 2004). It was also shown to have good test-retest reliability (0.96) and construct validity (0.86-0.95) (Hawker, Mian & Kendzerska, 2011).

The Brief Illness Perception Questionnaire (Brief IPQ) (Broadbent, Petrie, Maina & Weinman, 2006) was used to measure perceived personal control and injury causal factors. It has been found to have good test-retest reliability (0.72), good concurrent validity (0.65) and good internal consistency (0.73) (Hallegraeff, van der Schans, Krijnen & de Greef, 2013).

The Generalised Anxiety Disorder Assessment 7 (GAD-7) (Spitzer, 2006) was used to measure anxiety and has been found to be a reliable and valid measure of anxiety in the general population (Löwe, et. al, 2008). It has good test-retest reliability (0.83), internal consistency (0.92), construct validity (0.75) and convergent validity (0.72-0.74) (Spitzer, Kroenke, Williams & Löwe, 2006).

The Patient Health Questionnaire 9 (PHQ-9) (Kroenke, 2001) was used to measure depressive symptoms; it has been found to be a reliable and valid measure for making criteria-based diagnoses of depression and judging depression symptom severity (Kroenke, Spitzer & Williams, 2001). It has been found to have good test-retest reliability (0.84), internal consistency (0.86-0.89) and construct validity (0.73) (Kroenke et al., 2001).

The Trauma Screening Questionnaire (TSQ) (Brewin et al, 2002) was used to measure trauma symptoms; it has been found to consistently perform well and has been validated within one year of a traumatic event (Brewin, 2005), though specific data scores on validity

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and reliability could not be identified readily, despite this Brewin reference being used widely in the literature to support the psychometric properties of the tool.

The Conformity to Masculine Norms Inventory – 46 (Parent & Moradi, 2009) was included and as a shorter version of the original; it has been found to have strong internal consistency (0.77-0.91), high construct validity (0.89-0.98) and high test-retest reliability (Parent & Moradi, 2009).

The Treatment Self-Regulation Questionnaire (TSRQ) (Levesque, Williams, Elliot, Pickering, Bodenhamer & Finley, 2007) was used as a measure for autonomous motivation and has been previously used to test patients' motivation for physiotherapy treatment and been found to be reliable (Chan, Lonsdale, Ho, Yung & Chan, 2009), with good internal consistency (0.73-0.93) (Levesque et al., 2007).

The Brief COPE (Carver, 1997) was used to measure problem-focused coping, using the subscales of active coping, active planning and seeking social support for instrumental reasons. It was also used to measure emotion-focused coping using the sub-scales of venting emotions and seeking social support for emotional reasons; this replicates Hagger et al. (2005). protocol for testing problem-focused and emotion-focused coping. The scales have been found to have good internal consistency overall (0.90) (Hagger et al., 2005), with emotion focused coping and problem focused coping also showing good internal consistency (0.72 and 0.84) as well as test-retest reliability (0.58 and 0.72) by Cooper, Katona and Livingston (2008).

Participants' subjective reporting of engagement in physiotherapy was measured using the Self-Reported Occupational Injury Rehabilitation Adherence Scale (Chan & Hagger, 2011), which has been found to have good internal consistency (0.86) (Chan & Hagger, 2011).

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Demographic and injury details were collected using a purposely designed set of questions for this study and included age, ethnicity, age left school, site of injury, type of injury, whether it was a repeat or new injury, time since injury and whether they had had previous physiotherapy.

As well as self-reported engagement, the study collected engagement data from participants' physiotherapists via the Hopkins Rehabilitation Engagement Rating Scale (Kortte, Falk, Costello & Johnson-Greene, 2007). It has been found to be a valid and reliable clinician rating tool for rehabilitation engagement, with an internal consistency of 0.91, an inter-rater reliability of 0.73 and construct validity ranging from 0.72 to 0.95 (Kortte et al., 2007).

Procedure

Potential participants were invited to volunteer through posters and leaflets seen in non-NHS medical and physiotherapy receptions and via sports and military groups, including online social networks. Those potential participants who expressed an interest in taking part were screened against the inclusion/exclusion criteria and provided with an information sheet to read over 24 hours before opting to receive a questionnaire pack. Questionnaires were returned anonymously and participants asked their physiotherapist to complete the Hopkins Rehabilitation Engagement Rating Scale and return it anonymously, once completed (linked by a Personal Identification Number (PIN) pre-completed before packs were sent to participants). If forms were not received after 4 weeks, one reminder was sent to the participant.

All included participants returned their questionnaire (military n=16; sports n=22) but not all corresponding physiotherapists returned the Hopkins Rehabilitation Engagement Scale (military n=14; sports n=16).

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Data analysis

Injury cause was categorised manually following the Hagger et al. (2005) procedure for manually grouping data from the IPQ. ‘Risk factor cause attribution’, included diet, heredity, mental attitude and low resistance causes; ‘Chance cause attribution’, included carelessness, accident, negligence and chance-related causes; ‘Overtraining cause attribution’, included working too hard in training, overtraining, trying too hard in competition, over-work and fatigue (Hagger et al., 2005).

All other analysis was conducted using SPSS 22. Between-group analyses were performed on the demographic and injury factors to test for potential confounding factors. The between group analyses to test the study hypotheses were undertaken with the other factors.

Results

Participant characteristics

In total, 38 participants returned data; 22 in the sports committed group and 16 in the military group. The two groups were compared for significant differences in age, age of school leaving, and ethnicity (Table 1). The military group was found to be statistically significantly younger ($M = 27.25$, $SD = 4.18$) than the sports group ($M = 32.55$, $SD = 5.86$), $t = -3.08$, $df = 36$, two-tailed $p < 0.05$. No significant differences between groups were found for ethnicity (military 100% white; sports 95% white) or mean ‘age of school leaving’ (military mean 17.38 years; sports mean 17.32 years).

Table 1. Participant group demographics

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The two groups were compared using chi-squares for significant differences in type of injury, site of injury, time since injury, new or old injury, primary perceived cause of injury and whether they had had previous physiotherapy (Table 2). A statistically significant difference was found between groups for site of injury ($X^2= 10.59$, $df=1$ $p<0.05$), with greater lower limb injuries seen in the sports group. This is possibly a consequence of recruitment to this group mostly happening prior to the broadening of the inclusion criteria to musculoskeletal injury anywhere on the body.

There was a statistically significant difference between groups on whether the injury was a new or recurring injury ($X^2= 5.55$, $df=1$ $p<0.05$), with the military group reporting more first time injuries. The military group also reported less previous physiotherapy, which was statistically significant ($X^2=4.47$, $df=1$ $p<0.05$). This meant that overall the military group were more likely to be more physiotherapy rehabilitation naïve than the sports group.

No other statistically significant differences were found between groups for the injury related. The two groups were also compared for differences in perceived level of pain; no statistically significant differences were found between the military group mean ($M=5.63$, $SD=3.61$) and the sports group mean ($M=5.68$, $SD=3.39$).

Table 2. Injury factors

There were no significant differences found between groups on the measures of emotional affect when analysed using t-tests (GAD-7 measure of depression mean scores: military 5.56 vs sports 5.50; PHQ-9 measure of anxiety mean scores: military 4.94 vs 4.36; trauma screen scores: military 2.19 vs sports 1.77) (Table 3).

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Table 3. Measures of emotional affect

Test of hypotheses

Means and standard deviations for the dependent measures, by group, can be seen in Table 4. The two groups were compared on adherence to masculine norms using a t-test. The sports group ($M=123.64$, $SD=11.89$) reported greater adherence to the masculine norms than the military group ($M=108.38$, $SD=11.78$) and this difference was found to be statistically significant ($t=3.92$, $df=36$, two-tailed $p<0.001$).

Table 4. Means and standard deviations for the dependent measures, by group

The two groups were compared on perceived personal control and autonomous motivation using t-tests. The military group mean ($M=5.25$, $SD=2.49$) did not differ significantly from the sports group mean ($M=5.55$, $SD=2.28$) on the measure of perceived personal control ($t=0.379$, $df=36$, two-tailed $p=0.71$). The military group mean ($M=36.50$, $SD=6.55$) did not differ significantly from the sports group mean ($M=36.50$, $SD=5.44$) on the measure of autonomous control ($t=0.37$, $df=31$, two-tailed $p=1$).

The two groups were compared on use of emotion-focused and problem-focused coping strategies using t-tests. The sports group ($M=17.55$, $SD=4.19$) were found to use more problem-focused coping strategies than the military group ($M=13.94$, $SD=3.13$) and this difference was found to be statistically significant ($t=2.90$, $df=36$, two-tailed $p<0.05$). The sports group ($M=8.45$, $SD=1.92$) were also found to use more emotion-focused coping strategies than the military group ($M=6.25$, $SD=1.57$), which was also found to be statistically significant ($t=3.76$, $df=36$, two-tailed $p<0.05$).

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The sports and military group were compared on self-reported engagement in physiotherapy using a t-test and on physiotherapist reported engagement in physiotherapy using a non-parametric equivalent of a t-test (Mann-Whitney U test) as the sample sizes were too small (sports, N=16 and military, N=14) for parametric analyses. No significant difference was found between the military group mean (M=20.13, SD=4.36) and the sports group mean (M=20.82, SD=5.12) of self-reported engagement ($t=0.42$, $df=35$, two tailed $p=0.68$). The Mann-Whitney U-test found no statistically significant difference between the military and sports groups for physiotherapist reported engagement ($U=78$, $N1=14$, $N2=16$, two-tailed $p=0.15$).

Discussion

We examined the notion of a 'military culture' in psychological terms of masculine norms, perceived personal control, autonomous motivation, and coping strategies by comparing injured military personnel to similarly injured young male sports-men. It was hypothesised that the military group would demonstrate greater adherence to masculine norms than the non-military committed sports group. This study found the opposite to be true, with the sports group demonstrating significantly greater adherence to masculine norms than the military group. Many other aspects of attitude to rehabilitation, such as perceived control and engagement with rehabilitation, did not differ between the groups. This finding appears to challenge a 'masculine norms-oriented' view of military culture and its impact on serving personnel in response to musculoskeletal injury. It shows that whilst there may indeed be a 'culture' around injury and weakness in military personnel, it substantially overlaps with the 'culture' seen in similarly injured young male sportsmen, and in some cases is stronger in the latter. What has previously been anecdotally attributed to the effects of military training and

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attitudes may either be an incorrect stereotype, or it may be a feature of many competitive, physically oriented young male cultures.

It was proposed that military men with musculoskeletal injury would demonstrate both greater perceived personal control and autonomous motivation for rehabilitation because of the military culture; however, no significant differences were found between the military and sports group on either measure. This might suggest that neither adherence to masculine norms (as demonstrated by the sports group) nor a military culture has a significant impact on the cognitive representations of perceived personal control or autonomous motivation.

Alternatively, the prescribed nature of healthcare in the military might have reduced reporting of perceived control and autonomous motivation for rehabilitation in the military group whilst remaining key elements of the military culture in non-rehabilitation contexts. Alternatively, the low participant numbers may have resulted in a lack of statistical power to identify between-group differences.

It was hypothesised that the military group would demonstrate greater use of problem-focused coping strategies and less emotion-focused coping strategies than the non-military group in response to musculoskeletal injury. This study found that the sports group reported significantly greater use of problem-focused coping strategies than the military group, the opposite of what was predicted. This might suggest that a military culture does not predict greater use of problem-focused coping strategies in response to musculoskeletal injury. This study found that the military group did report significantly lower levels of emotion-focused coping strategies, thus supporting this part of the hypothesis. This finding appears to support the notion that lower levels of emotion-focused coping in military personnel in response to musculoskeletal injury may result from exposure to a military culture.

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Finally, it was hypothesised that a military group would show greater physiotherapy rehabilitation engagement levels than a non-military sports committed group. No significant differences were found between groups suggesting that the military culture does not have an impact on physiotherapy rehabilitation adherence for musculoskeletal injuries.

This study has potential clinical implications. The military group reported significantly lower levels of both problem and emotion-focused coping strategies raising questions as to what strategies are used in response to musculoskeletal injuries and how these might be captured to help inform clinical practice. It might simply be that the way musculoskeletal injuries are handled in the military system negates the need for individual serving personnel to employ their own coping strategies as they have a pre-defined process imposed on them. If this is the case, what happens to injured service personnel on medical discharge when this pre-defined process is lost and they then need to activate their own coping strategies to respond to musculoskeletal injuries?

This study has potential research implications. It might be that some factors measured in this study are mediating others so obscuring the relationships; however, such inferences would need regression testing with much larger sample sizes before any conclusions could be substantiated. This is a key recommendation for future research looking to guide clinicians on where to focus when trying to improve engagement in musculoskeletal injuries rehabilitation with serving military personnel.

It might be that the predicted results were not found in this study due to an artefact of measurement. For example, the Conformity to Masculine Norms Inventory 46 measures 11 sub-scales of 'winning', 'emotional control', 'risk taking', 'violence', 'power over women', 'dominance', 'playboy', 'self-reliance', 'disdain of homosexuality', 'pursuit of status' and 'primacy of work' and these may be outdated or different male norms than those pertinent to a

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modern military culture. It is recommended that further research be undertaken to clarify the definition of a military culture so that a valid and reliable tool can be developed and used to continue to more accurately test any impact it has on healthcare related behaviour.

It would additionally be of interest to test this definition and tool with military veterans, where engaging in physiotherapy would no longer be driven by a military-prescribed system for dealing with musculoskeletal injuries nor a possible fear of losing one's military service role/employment and thus identity, comrades, finances and everything else that goes with military service. This may help identify if the military process for dealing with musculoskeletal injuries is negating the need for personally derived coping strategies and so masking the military culture's impact on idiosyncratic responses to musculoskeletal injury in military personnel.

This study has started to test the concept of a 'military culture' that is frequently discussed but poorly defined and operationalized. We wished to be sure that we were genuinely accessing military coping styles rather than those, for example, that are seen in other groups of physically ambitious young men. This informed our choice of civilian sportsmen as a control group. Future research with larger sample sizes and resources may benefit from including other control groups to continue to test the various aspects of a 'military culture', such as uniformed professions like fire-fighters and police officers and even more widely, the general population.

The homogeneity of the groups and the relatively small sample sizes impact on the generalisability of the study findings, which must be taken into account when interpreting the results. The samples were just large enough to perform mostly parametric analyses but greater numbers would have given more power and thus greater reliability to the study findings (though not where the means were almost identical, e.g. for perceived personal control and

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autonomous motivation). Considerably larger sample sizes would also have supported approaches such as regression analysis to test the relationships between cultural context, cognitive representations, coping strategies and engagement in rehabilitation.

The study participants were self-selecting, introducing potential selection bias; data collected using a different method, such as physiotherapists giving all eligible patients questionnaires, may show different results. The participants in this study, though injured, were high functioning in that their mean mood ratings were not near clinical levels and their mean pain ratings were relatively low, thus limiting the generalisability of these findings to less functional populations, with more clinically significant pain and mood ratings.

Our groups were matched for gender, ethnicity, physical activity, pain level, education and mood. However, they were not matched in age, site of injury and new or recurring injury. We must therefore acknowledge the potential impact of these differences, e.g. older men might adhere more to masculine norms than younger men and so the sports group being significantly older may have had an impact on this measure. Due to data completeness, we are unable to report on demographics such as rank and military service branch; we have hypothesized that low completion rates for these questions may be due to a desire to maintain high levels of confidentiality and anonymity in a group (currently serving military) wary of sharing potentially personally identifiable information. A larger sample size and alternate recruitment methods may have mitigated this and future research should look to further control for these factors.

In summary, despite its limitations, this contributes to the very limited literature testing postulations about military culture and suggests that further research should be undertaken. Assumptions about 'military culture' with regard to injury and weakness may be simply

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wrong, and may in part be a non-specific feature of the coping styles of young males who engage in physically demanding activities.

References

- Abb, W. & Goodale, R. (2011). Is your practice prepared to identify or treat post deployment problems? The Importance of Understanding Military Culture for Civilian Health Providers. Available at <http://www.citizensoldiersupport.org/>
- Brewin, C. R. (2005). Systematic review of screening instruments for adults at risk of PTSD. *Journal of Traumatic Stress*, 18(1), 53-62.
- Brewin, C.R., Rose, S., Andrews, B., Green, J., Tata, P., McEvedy, C., Turner, S. & Foa, E. B. (2002). Brief screening instrument for post-traumatic stress disorder. *The British Journal of Psychiatry*, 181. 158-162
- Broadbent, E., Petrie, K.J., Main, J., & Weinman, J. (2006). The Brief Illness Perception Questionnaire (BIPQ). *Journal of Psychosomatic Research*, 60, 631-637.
- Broadbent, E., Wilkes, C., Koschwanez, H., Weinman, J., Norton, S., & Petrie, K. J. (2015). A systematic review and meta-analysis of the Brief Illness Perception Questionnaire. *Psychology & Health*, 30(11), 1361-1385.
- Brooks, G. (2001). Post Vietnam gender role strain: a needed concept? *Professional Psychology: Research & Practice*, 21. 18-25.
- Bryan, C. J. & Morrow, C. E. (2011). Circumventing mental health stigma by embracing the warrior culture: lessons learned from the defender's edge program. *Professional Psychology: Research and Practice*, Vol. 42, No. 1, p16-23.
- Callaghan, B., Condie, E., & Johnston, M. (2008). Using the common sense self-regulation model to determine psychological predictors of prosthetic use and activity limitations in lower limb amputees. *Prosthetics and orthotics international*, 32(3), 324-336.

MILITARY CULTURE, PSYCHOSOCIAL FACTORS AND INJURY

Carver, C. S. (2007). COPE (complete version). *Retrieved January, 21, 2010.*

- Chan, D. K. C., & Hagger, M. S. (2012). Autonomous forms of motivation underpinning injury prevention and rehabilitation among police officers: An application of the trans-contextual model. *Motivation and Emotion*, 36(3), 349-364.
- Chan, D. K. C., Hagger, M. S., & Spray, C. M. (2011). Treatment motivation for rehabilitation after a sport injury: Application of the trans-contextual model. *Psychology of Sport and Exercise*, 12(2), 83-92.
- Chan, D. K., Lonsdale, C., Ho, P. Y., Yung, P. S., & Chan, K. M. (2009). Patient motivation and adherence to postsurgery rehabilitation exercise recommendations: the influence of physiotherapists' autonomy-supportive behaviors. *Archives of Physical Medicine and Rehabilitation*, 90(12), 1977-1982.
- Chun, C. A., Moos, R. H., & Cronkite, R. C. (2006). Culture: A fundamental context for the stress and coping paradigm. In *Handbook of Multicultural Perspectives on Stress and Coping*. P. T. Wong, & L. C. Wong (Eds.). Springer Science & Business Media.
- Cooper, C., Katona, C., & Livingston, G. (2008). Validity and reliability of the brief COPE in carers of people with dementia: the LASER-AD Study. *The Journal of Nervous and Mental Disease*, 196(11), 838-843.
- Crossman, J. (1997). Psychological rehabilitation from sports injuries. *Sports Medicine*, 23. 333-339.
- Ford, I.W., Eklund, R.C. & Gordon, S. (2000). An examination of psychosocial variables moderating the relationships between life stress and injury time loss among athletes of high standard. *Journal of Sports Sciences*, 18. 301-312.
- Gauntlett-Gilbert, J. & Wilson, S. (2013). Veterans and chronic pain. *British Journal of Pain*. 1-6.

MILITARY CULTURE, PSYCHOSOCIAL FACTORS AND INJURY

Hagger, M.S., Chatzisarantis, N.L.D, Griffin, M. & Thatcher, J. (2005). Journal of Applied Social Psychology, 35, 11. 2345-2374.

Hallegraeff, J. M., van der Schans, C. P., Krijnen, W. P., & de Greef, M. H. (2013).

Measurement of acute nonspecific low back pain perception in primary care physical therapy: reliability and validity of the brief illness perception questionnaire. BMC Musculoskeletal Disorders, 14(1), 1.

Hawker, G. A., Mian, S., Kendzerska, T., & French, M. (2011). Measures of adult pain: Visual analog scale for pain (vas pain), numeric rating scale for pain (nrs pain), mcgill pain questionnaire (mpq), short-form mcgill pain questionnaire (sf-mpq), chronic pain grade scale (cpgs), short form-36 bodily pain scale (sf-36 bps), and measure of intermittent and constant osteoarthritis pain (icoap). Arthritis Care & Research, 63(S11), S240-S252.

Herr, K. A., Spratt, K., Mobily, P. R., & Richardson, G. (2004). Pain intensity assessment in older adults: use of experimental pain to compare psychometric properties and usability of selected pain scales with younger adults. The Clinical Journal of Pain, 20(4), 207-219.

Knowles, S. B., Marshall, S. W., Bowling, J. M., Loomis, D., Millikan, R., Yang, J. & Mueller, F. O. (2006). A prospective study of injury incidence among North Carolina high school athletes. American journal of epidemiology, 164(12), 1209-1221.

Kortte, K. B., Falk, L. D., Costello, R. C. & Johnson-Greene, D. (2007). The Hopkins Rehabilitation Engagement Rating Scale: Development and psychometric properties. Arch Phys Med Rehabil, 88, 877-884.

MILITARY CULTURE, PSYCHOSOCIAL FACTORS AND INJURY

- Kroenke, K., Spitzer, R.L. & Williams, J.B. (2001). The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*, 16. 606-13.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.
- Leventhal, H., Meyer, D., & Nerenz, D. (1980). The common sense representation of illness danger. *Contributions to Medical Psychology*, 2, 7-30.
- Levesque, C. S., Williams, G. C., Elliot, D., Pickering, M. A., Bodenhamer, B., & Finley, P. J. (2007). Validating the theoretical structure of the Treatment Self-Regulation Questionnaire (TSRQ) across three different health behaviors. *Health Education Research*, 22(5), 691-702.
- Löwe, B., Decker, O., Müller, S., Brähler, E., Schellberg, D., Herzog, W., & Herzberg, P. Y. (2008). Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. *Medical Care*, 46(3), 266-274.
- Mahalik, J. R., Locke, B. D., Ludlow, L. H., Diemer, M. A., Scott, R. P., Gottfried, M., & Freitas, G. (2002). Development of the Conformity to Masculine Norms Inventory. *Psychology of Men & Masculinity*, 4(1), 3.
- Matthews, M. D., Eid, J., Kelly, D., Bailey, J. K., & Peterson, C. (2006). Character strengths and virtues of developing military leaders: An international comparison. *Military Psychology*, 18, S57.
- Ministry of Defence (MOD). (2013). Annual Medical Discharges in the UK Regular Armed Forces 2008/09-2012/13. Available at <http://www.dasa.mod.uk>
- Ministry of Defence (MOD). (2017). Annual Medical Discharges in the UK Regular Armed Forces 1 April 2012 to 31 March 2017. Available at <http://www.dasa.mod.uk>

MILITARY CULTURE, PSYCHOSOCIAL FACTORS AND INJURY

- Nicholl, J.P., Coleman, P & Williams, B.T. (1991). Pilot study of the epidemiology of sports injuries and exercise-related morbidity. *British Journal of Sports Medicine*, 25. 61-66.
- Office for National Statistics. (2017). *Sickness Absence in the Labour Market: 2016*.
Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/sicknessabsenceinthelabourmarket/2016#what-are-the-reasons-for-sickness-absence>
- Parent, M. C., & Moradi, B. (2009). Confirmatory factor analysis of the Conformity to Masculine Norms Inventory and development of the Conformity to Masculine Norms Inventory-46. *Psychology of Men & Masculinity*, 10(3), 175.
- Smith, A. M., Scott, S.G. & Wiese, D.M. (1990). Psychological effects of sports injuries on coping. *Sports Medicine*, 9. 352-369.
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of Internal Medicine*, 166(10), 1092-1097.
- Strowbridge, N. F., & Burgess, K. R. (2002). Sports and training injuries in British soldiers: the Colchester Garrison Sports Injury and Rehabilitation Centre. *Journal of the Royal Army Medical Corps*, 148(3), 236-243.
- Tamres, L. K., Janicki, D. & Helgeson, V. S. (2002). Sex differences in coping behavior: A meta-analytic review and an examination of relative coping. *Personality and Social Psychology Review*, 6, 1. 2-30.
- Tanielian, T. & Jaycox, C.H. Eds. (2008). *Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences and Services to Assist Recovery*. Santa Monica, CA: RAND Corporation.

MILITARY CULTURE, PSYCHOSOCIAL FACTORS AND INJURY

Thompson, E.H. & Pleck, J.H. (1986). The structure of male norms. *American Behavioural Scientist*, 29. 531-543.

Young, K., White, P., & McTeer, W. (1994). Body talk: Male athletes reflect on sport, injury, and pain. *Sociology of sport journal*, 11(2), 175-194.

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Table 1. Participant group demographics

		Mean age	Mean age left	Ethnicity	
		(years)	school (years)	White	Mixed
Group	Military	27.25 (<i>SD</i> =4.18)	17.38 (<i>SD</i> =0.96)	16 (100%)	0 (0%)
	Sports	32.55 (<i>SD</i> =5.86)	17.32 (<i>SD</i> =0.99)	20 (95%)	1 (5%)

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Table 2. Injury factors

		Group				Total	
		Military		Sports		Count	%
		Count	%	Count	%		
Type of injury	Fracture	3	19	1	5	4	11
	Dislocation, sprain, strain of joints or ligaments	8	50	8	36	16	42
	Muscle or Tendon Injury	4	25	10	46	14	37
	Crush Injury	0	0	1	5	1	3
	Other	1	6	2	9	3	8
Site of injury	Lower limb	8	50	21	96	29	76
	Other	8	50	1	5	9	24
Time since injury	0-1 week	1	6	0	0	1	3
	2-3 weeks	1	6	8	36	9	24
	1-2 months	6	38	4	18	10	26
	3-4 months	5	31	4	18	9	24
	5-6 months	3	19	6	27	9	24
New or old injury	First time had this injury	12	80	9	41	21	57
	Longstanding or reoccurring	3	20	13	59	16	43
Primary cause of injury	Psychological or physical risk factors	1	6	6	27	7	18
	Bad luck or personal responsibility	6	38	5	23	11	29
	Overtraining or physical stress	9	56	11	50	20	53
Had previous	No	9	56	5	23	14	37

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physiotherapy	Yes	7	44	17	77	24	63
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Table 3. Measures of emotional affect

	Group	<i>M</i>	<i>SD</i>
GAD-7 (depression)	Military	5.56	3.95
	Sports	5.50	3.94
	Total	5.53	3.89
PHQ-9 (anxiety)	Military	4.94	4.58
	Sports	4.36	2.75
	Total	4.61	3.59
Trauma screen	Military	2.19	2.51
	Sports	1.77	1.93
	Total	1.95	2.17

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Table 4. Dependent variables

Variable	Group	<i>M</i>	<i>SD</i>
Masculine norms	Military	108.38	11.78
	Sports	123.64	11.89
Perceived personal control	Military	5.25	2.49
	Sports	5.55	2.28
Autonomous control	Military	36.50	6.55
	Sports	36.50	5.44
Emotion focused coping	Military	6.25	1.57
	Sports	8.45	1.92
Problem focused coping	Military	13.94	3.13
	Sports	17.55	4.19
Self reported engagement	Military	20.13	4.36
	Sports	20.82	5.12